

LAB GUIDE

Lab: Deploy an Azure Kubernetes Service (AKS) cluster using the Azure portal

Learning Objectives

- How to deploy an AKS cluster using the Azure portal.

Pre-requisites

- Microsoft Azure Account: You'll need a valid and active Azure account for the Azure labs.

Length

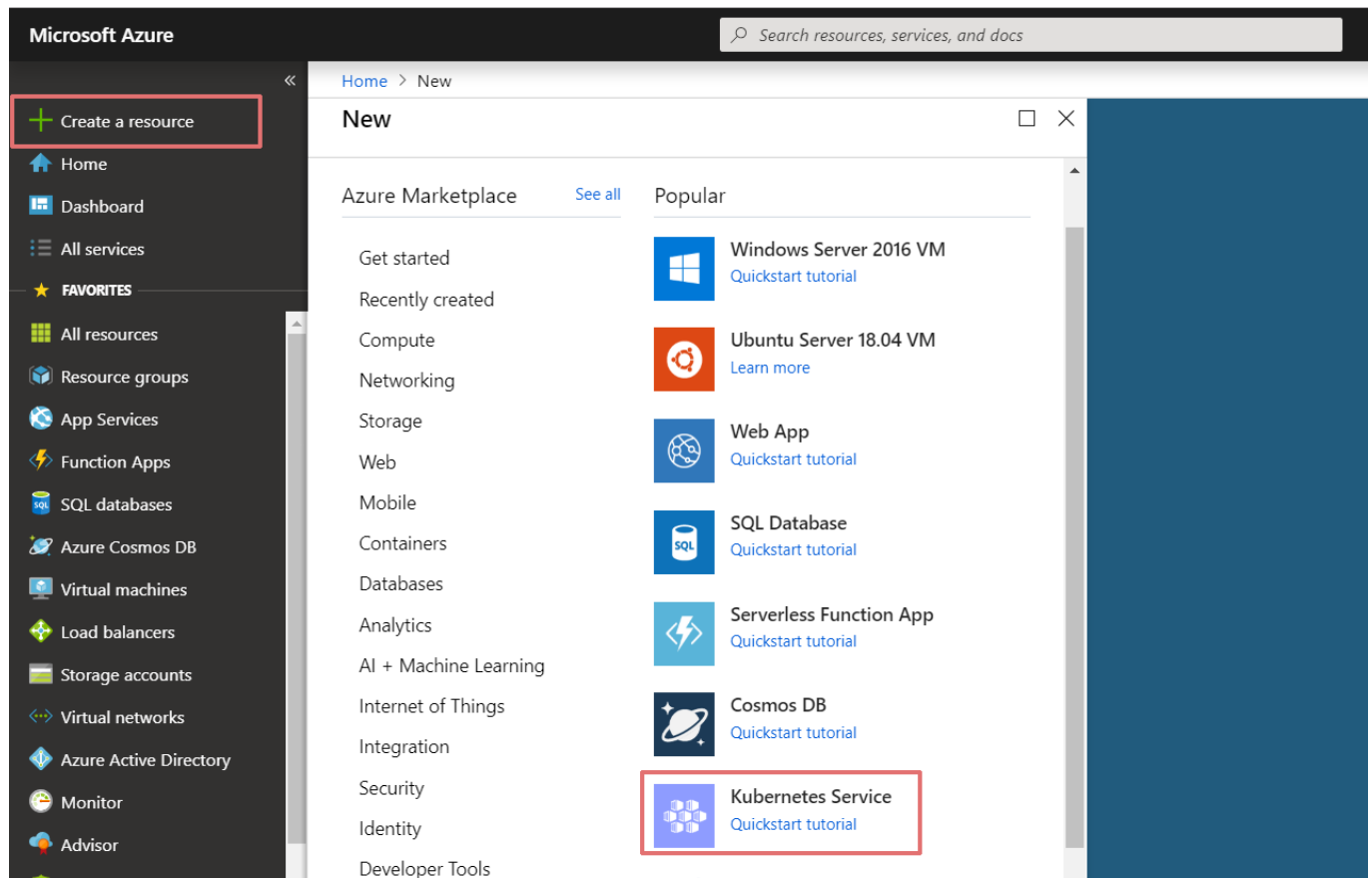
50 minutes

Before you begin

1. Sign in [Portal Azure](#) and follow the instructions

Exercise 1: Create an AKS Cluster

1. First click on **Create a resource** then click on **Kubernetes Service** button to initiate the configuration



2. Set the next options in **PROJECT DETAILS** and **CLUSTER DETAILS** sections and then click on **Next: Authentication >**

- Subscription
- Version: Select the default version
- Resource group: Select the Module-03-XXXXX resource group, where XXXXX is the number generated for this lab
- Kubernetes cluster name
- DNS name prefix

PROJECT DETAILS

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription ⓘ

* Resource group ⓘ [Create new](#)

CLUSTER DETAILS

* Kubernetes cluster name ⓘ ✓

* Region ⓘ

* Kubernetes version ⓘ

* DNS name prefix ⓘ ✓

SCALE

The number and size of nodes in your cluster. For production workloads, at least 3 nodes are recommended for resiliency. For development or test workloads, only one node is required. You will not be able to change the node size after cluster creation, but you will be able to change the number of nodes in your cluster after creation. [Learn more about scaling in Azure Kubernetes Service](#)

* Node size ⓘ **Standard DS2 v2**
2 vcpus, 7 GB memory
[Change size](#)

* Node count ⓘ

Virtual nodes (preview) ⓘ

[Review + create](#)
[Previous](#)
[Next : Authentication >](#)

- Click on **Configure service principal** then check the **Use Existing**, On Service principal client ID, enter the Application/Client ID obtained for this lab, and in the Service principal client secret, enter the Application Secret Key obtained for this lab, then click on **Ok**

Service Principal Details

Application/Client Id	<input type="text" value="db70c46a-4a8a-4add-89b9-4ac3977b599c"/>	
Application Display Name	<input type="text" value="https://odl_user_sp_55693"/>	
Application Secret Key	<input type="text" value="mxxm32YLE*ya"/>	
Subscription Id	<input type="text" value="4f31fe58-0344-43f6-a029-e2e6e2354c3c"/>	
Tenant Id	<input type="text" value="cefc8e7-ee30-49b8-b190-133f1daafd85"/>	
Tenant Domain Name	<input type="text" value="msazurelabs.onmicrosoft.com"/>	

- click on **Yes** on **Enable RBAC** option for Kubernetes role-based access controls (RBAC)

Home > New > Create Kubernetes cluster

Create Kubernetes cluster

Basics Authentication Networking Monitoring Tags Review + create

The **cluster infrastructure** service principal is used by the Kubernetes cluster to manage cloud resources attached to the cluster. [Learn more](#)

Kubernetes authentication and authorization is used by the Kubernetes cluster to control user access to the cluster as well as what the user may do once authenticated. [Learn more](#)

CLUSTER INFRASTRUCTURE

* Service principal ⓘ (new) default service principal
[Configure service principal](#)

KUBERNETES AUTHENTICATION AND AUTHORIZATION

Enable RBAC ⓘ No Yes

5. Go to Monitoring Tab and Set No for Enable container monitoring

Create Kubernetes cluster

Basics Authentication Networking Monitoring Tags Review + create

With Azure Kubernetes Service, you will get CPU and memory usage metrics for each node. In addition, you can enable container monitoring capabilities and get insights into the performance and health of your entire Kubernetes cluster. You will be billed based on the amount of data ingested and your data retention settings.

[Learn more about container performance and health monitoring](#)
[Learn more about pricing](#)

AZURE MONITOR

Enable container monitoring No Yes

6. click on **Review + create**, after Azure makes the review click on create

Create Kubernetes cluster

✓ Validation passed

Basics

Authentication

Networking

Monitoring

Tags

Review + create

BASICS

Subscription

Resource group

Region

Kubernetes cluster name

Kubernetes version

DNS name prefix

Node count

Node size

Virtual nodes (preview)

East US

3

Standard_DS2_v2

Disabled

AUTHENTICATION

Enable RBAC

Yes

NETWORKING

HTTP application routing

Network configuration

No

Basic

MONITORING

Enable container monitoring

Yes

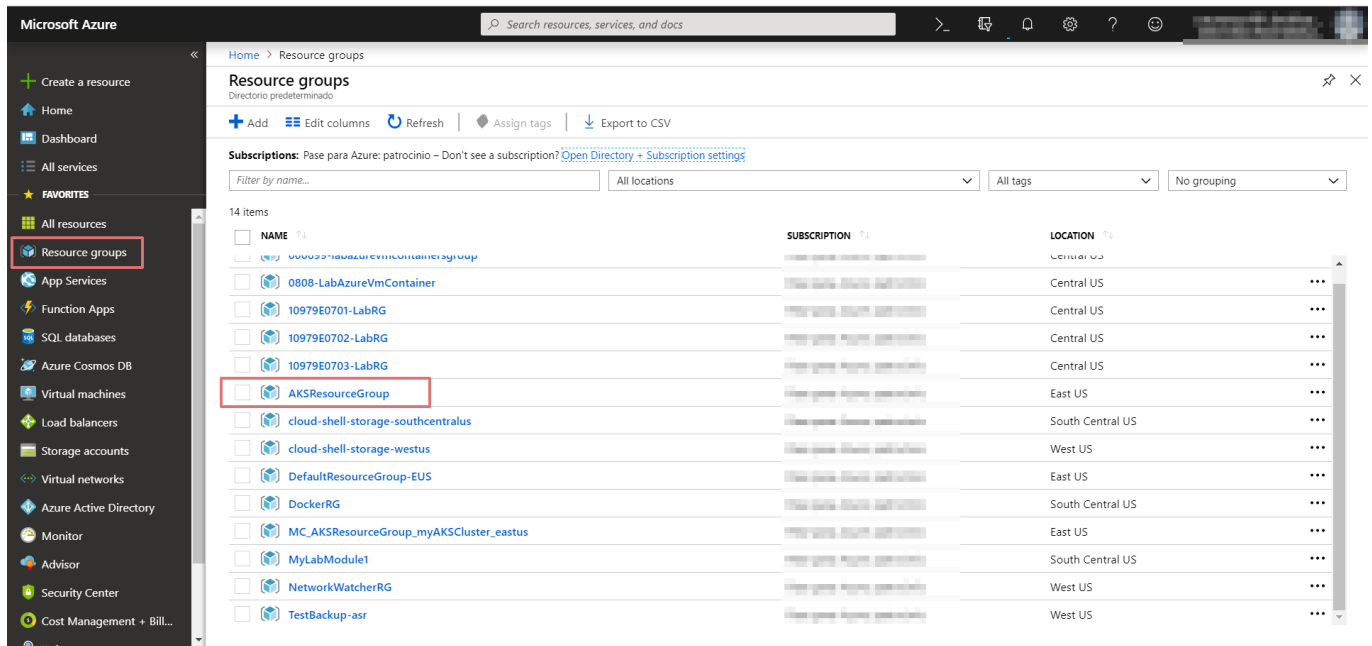
Create

Previous

Next

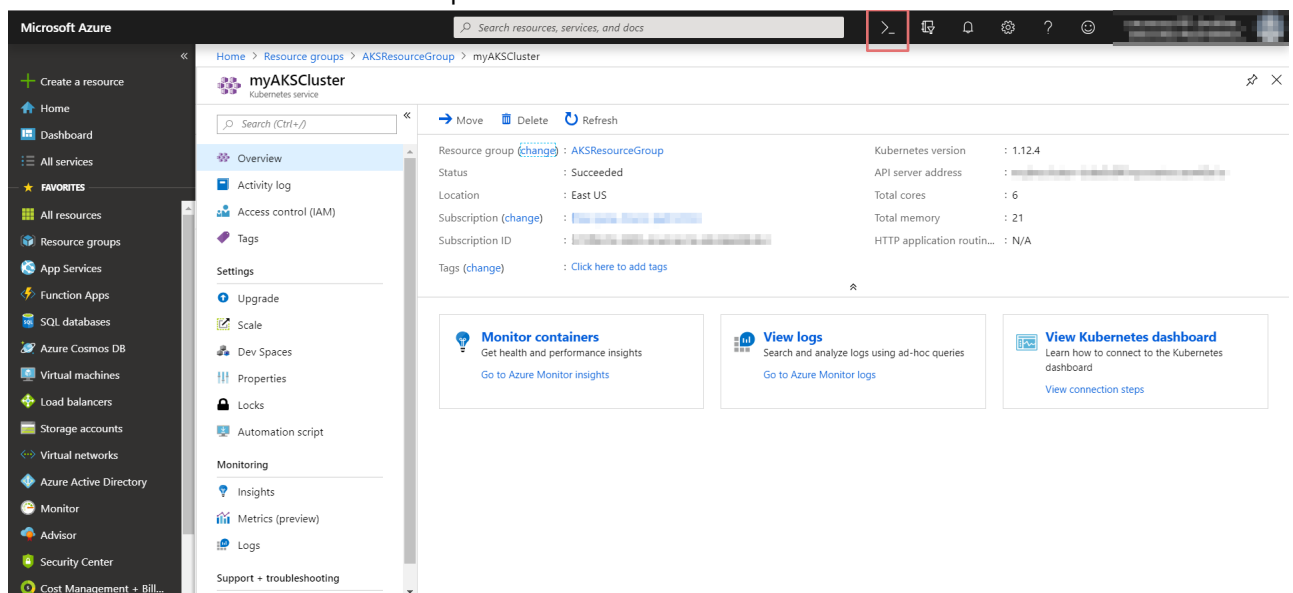
Download a template for automation

note It takes a few minutes to create the AKS cluster and to be ready for use. When finished, browse to the AKS cluster resource group, such as Module-03-XXXXX, and select the AKS resource, such as myAKSCluster. The AKS cluster dashboard is shown.



task 2: Connect to the cluster

1. Click on the marked icon in red to open Cloud Shell



2. Write the next command to obtain the credentials to your Kubernetes cluster, replace the XXXXX on the resource group to match the with the number generated for your lab, and replace the myAKSCluster with the name you specified on the past task.

```
az aks get-credentials --resource-group Module-03-XXXXX --name myAKSCluster
```

3. Write the next command to configure kubectl to connect to your Kubernetes cluster

```
kubectl get nodes
```

note This command downloads credentials and configures the Kubernetes CLI to use them

The screenshot shows the Azure portal interface for a Kubernetes service named 'myAKSCluster'. The cluster is located in the 'AKSResourceGroup' and has a status of 'Succeeded'. The terminal window below shows the following commands and output:

```
dc@Azure:~$ az aks get-credentials --resource-group AKSResourceGroup --name myAKSCluster
Merged "myAKSCluster" as current context in /home/dc/.kube/config
dc@Azure:~$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
aks-agentpool-36173407-0	Ready	agent	15m	v1.12.4
aks-agentpool-36173407-1	Ready	agent	15m	v1.12.4
aks-agentpool-36173407-2	Ready	agent	15m	v1.12.4

Exercise 2: Run the application

1. Write the next command to create a new file named **azure-vote.yaml**

```
nano azure-vote.yaml
```

The screenshot shows a terminal window with the command `nano azure-vote.yaml` being executed. The prompt is `dc@Azure:~$`.

note you can use **nano** or **vi** to create the file


2. Copy the next content and paste in your new file

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: azure-vote-back
spec:
  replicas: 1
  selector:
    matchLabels:
      app: azure-vote-back
  template:
    metadata:
      labels:
        app: azure-vote-back
    spec:
      containers:
```

```
- name: azure-vote-back
  image: redis
  resources:
    requests:
      cpu: 100m
      memory: 128Mi
    limits:
      cpu: 250m
      memory: 256Mi
  ports:
    - containerPort: 6379
      name: redis
---
apiVersion: v1
kind: Service
metadata:
  name: azure-vote-back
spec:
  ports:
    - port: 6379
  selector:
    app: azure-vote-back
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: azure-vote-front
spec:
  replicas: 1
  selector:
    matchLabels:
      app: azure-vote-front
  template:
    metadata:
      labels:
        app: azure-vote-front
    spec:
      containers:
        - name: azure-vote-front
          image: microsoft/azure-vote-front:v1
          resources:
            requests:
              cpu: 100m
              memory: 128Mi
            limits:
              cpu: 250m
              memory: 256Mi
          ports:
            - containerPort: 80
          env:
            - name: REDIS
              value: "azure-vote-back"
---
apiVersion: v1
```



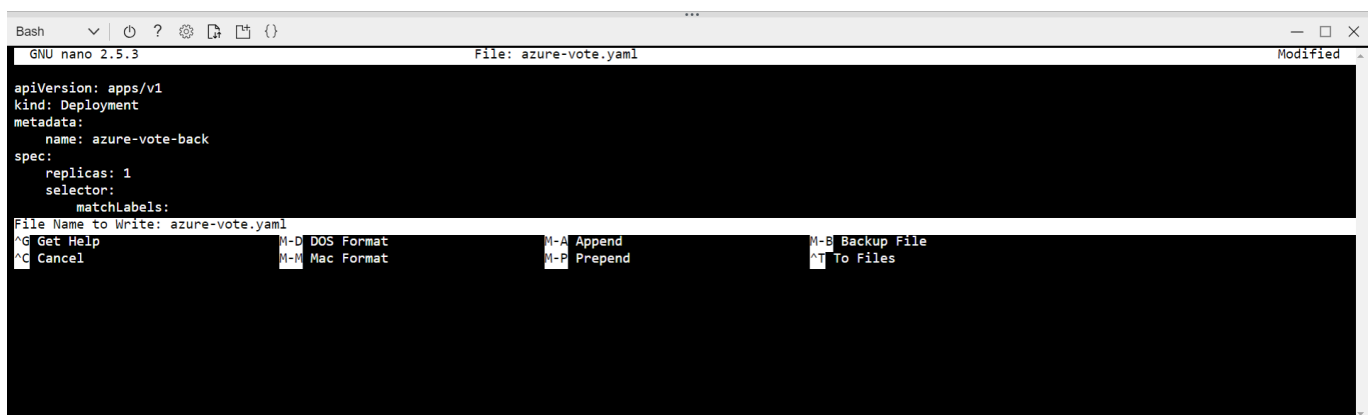
```
kind: Service
metadata:
  name: azure-vote-front
spec:
  type: LoadBalancer
  ports:
  - port: 80
  selector:
    app: azure-vote-front
```



The screenshot shows the nano text editor with the file 'azure-vote.yaml' open. The content of the file is a Kubernetes Deployment manifest for 'azure-vote-back'. The 'spec' section is currently empty. The bottom status bar shows various keyboard shortcuts, with '^O Write Out' highlighted in a red box.

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: azure-vote-back
spec:
  replicas: 1
  selector:
    matchLabels:
```

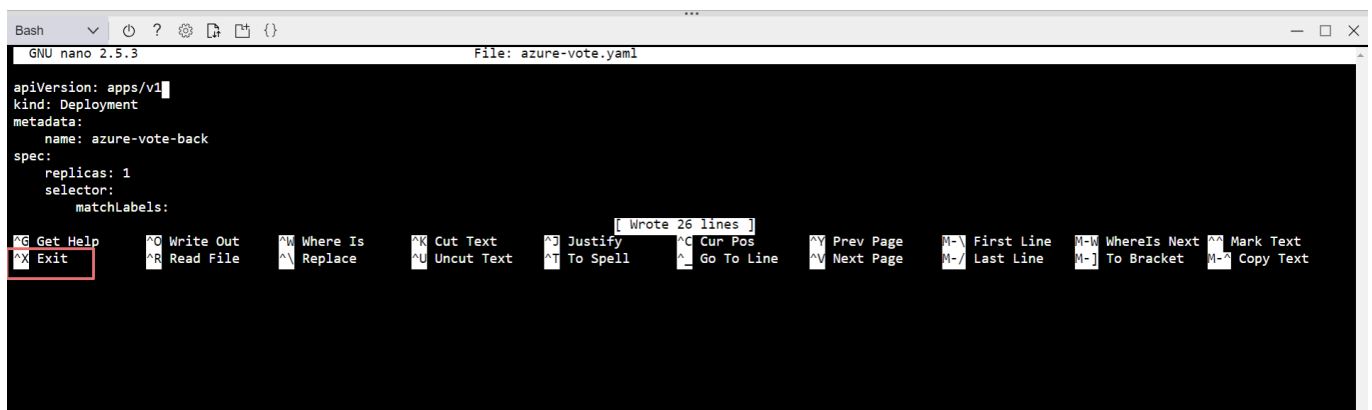
2. Press ctrl+O



The screenshot shows the nano text editor with the 'Write Out' prompt displayed. The prompt asks for the 'File Name to Write' and the default is 'azure-vote.yaml'. The bottom status bar shows various keyboard shortcuts, with '^O Write Out' highlighted in a red box.

```
File Name to Write: azure-vote.yaml
```

3. Press Enter



The screenshot shows the nano text editor with the 'Wrote 26 lines' message displayed. The bottom status bar shows various keyboard shortcuts, with '^O Write Out' highlighted in a red box.

```
Wrote 26 lines
```

4. Press ctrl+X

5. Type the next command to deploy the application

```
kubectl apply -f azure-vote.yaml
```

```
dc@Azure:~$ nano azure-vote.yaml
dc@Azure:~$ kubectl apply -f azure-vote.yaml
deployment.apps/azure-vote-back unchanged
service/azure-vote-back created
deployment.apps/azure-vote-front created
service/azure-vote-front created
dc@Azure:~$
```

note When you finish this exercise your application will be deployed

Exercise 3: Test the application

1. Run the next command to monitor the progress

```
kubectl get service azure-vote-front --watch
```

```
dc@Azure:~$ kubectl get service azure-vote-front --watch
NAME                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
azure-vote-front    LoadBalancer 10.0.22.149    40.121.95.100  80:31149/TCP     3m
```

note If **EXTERNAL-IP** is **pending** wait until changes to an actual **public IP**

2. When the **EXTERNAL-IP** address changes from pending to an actual public IP address, use **CTRL+C** to stop the **kubectl** watch process
3. Enter in your browser and enter your external-IP and you'll see your service running

Azure Voting App

Cats

Dogs

Reset

Cats - 0 | Dogs - 0

note your application is now online

4. Close the Cloud Shell Window.

End of the lab